

 <b>FLORIDA ATLANTIC UNIVERSITY</b>	<b>NEW/CHANGE PROGRAM REQUEST</b> <b>Graduate Programs</b>		UGPC Approval <u>3/20/24</u> UUPC UFS Approval <u>3/25/24</u> Banner _____ Catalog _____ UFS Approval _____
	<b>Department</b> Electrical Engineering and Computer Science (EECS) <b>College</b> Engineering and Computer Science		
<b>Program Name</b> All the Combined BS - MS programs offered by the EECS department	<input type="checkbox"/> New Program* <input checked="" type="checkbox"/> Change Program*	<b>Effective Date</b> (TERM & YEAR) Fall 2024	
<p><b>Please explain the requested change(s) and offer rationale below or on an attachment.</b></p> <p>This proposal increases the maximum number of credits that can be double counted in the combined BS-MS programs in the EECS department from 9 credits to 12 credits. Since the GRE is not required any longer for admission to master's programs, we change "the GRE requirement is waived" to "the GRE is not required".</p>			
<p>*All new programs and changes to existing programs must be accompanied by a catalog entry showing the new or proposed changes.</p>			
<b>Faculty Contact/Email/Phone</b> Dr. Hari Kalva, kalva@fau.edu, 561.297.0511		<b>Consult and list departments that may be affected by the change(s) and attach documentation</b> NA	
<b>Approved by</b> Department Chair <u>Hari Kalva</u> College Curriculum Chair <u>Masoud Jahandar Lashaki</u> College Dean <u>McArdei</u> UUPC Chair <u>Korey Sorge</u> UG Studies Dean <u>Dan Meeroff</u> Graduate College Dean _____ UFS President _____ Provost _____		<b>Date</b> <u>2/19/2024</u> <u>2/20/2024</u> <u>2/26/2024</u> <u>3/25/24</u> <u>3/25/24</u> _____ _____	

Email this form and attachments to [UGPC@fau.edu](mailto:UGPC@fau.edu) 10 days before the UGPC meeting.

EECS combined BS-MS programs, additional explanation for the 4 graduate courses to be double counted in the bachelor programs and master programs.

**BS Computer Science and the BA Computer Science programs**

<https://www.fau.edu/registrar/university-catalog/catalog/engineering/#bscs>

The BS/BA CS programs have 15 credits of elective courses. The 12 graduate credits to be double counted will count as elective courses in the BS/BA CS programs.

**BS Electrical Engineering program**

<https://www.fau.edu/registrar/university-catalog/catalog/engineering/>

This program allows 12 credits of elective courses. The 12 graduate credits to be double counted will count as elective courses in the BS Electrical Engineering programs.

**BS Computer Engineering**

<https://www.fau.edu/registrar/university-catalog/catalog/engineering/>

This program requires CAP 4773 Introduction to Data Science and Analytics course. This course will be replaced by its graduate version CAP 5768 Introduction to Data Science.

In addition, this bachelor program has 9 credits of elective courses. The remaining 3 graduate courses (9 credits) will be counted as elective courses in the BS Computer Engineering program.

**BS Data Science and Analytics, the Data Science and Engineering Concentration**

<https://www.fau.edu/registrar/university-catalog/catalog/engineering/#bsdsa>

This program requires CAP 4773 Introduction to Data Science and Analytics course. This course will be replaced by its graduate version CAP 5768 Introduction to Data Science.

In addition, this bachelor program has 9-12 credits of elective courses. The remaining 3 graduate courses (9 credits) will be counted as elective courses in the bachelor program.

## **ELECTRICAL ENGINEERING AND COMPUTER SCIENCE COMPUTER SCIENCE AND COMPUTER ENGINEERING COMBINED PROGRAMS**

### **COMPUTER ENGINEERING**

#### **BACHELOR OF SCIENCE IN COMPUTER ENGINEERING (B.S.C.E.) TO MASTER OF SCIENCE (M.S.) COMBINED PROGRAM**

### **COMPUTER SCIENCE**

#### **BACHELOR OF SCIENCE IN COMPUTER SCIENCE (B.S.C.S.) TO MASTER OF SCIENCE (M.S.) COMBINED PROGRAM**

The department offers a combined Bachelor of Science in Computer Engineering (B.S.C.E.) to Master of Science (M.S.) program. In the computer science area, it offers a combined Bachelor of Science in Computer Science (B.S.C.S.) to Master of Science (M.S.) degree program. The bachelor's degrees and the master's degrees must be in the same area. Students in either combined program may count up to 9 12 credits of approved graduate coursework (5000 level or higher) toward both their bachelor's and master's degrees as long as the combined program totals a minimum of 150 credits:

1. The student has met the minimum 120 credits for the bachelor's degree; and
2. The student has taken a minimum of 30 credits in 5000 level or higher courses for the master's program.

With an approximate duration of five years, these combined programs provide attractive ways for students to continue their graduate work. Students complete the undergraduate program first.

#### **Prerequisite Coursework for Transfer Students**

Students transferring to Florida Atlantic University must complete both lower-division requirements (including the requirements of the Intellectual Foundations Program) and requirements for the college and major. Lower-division requirements may be completed through the A.A. degree from any Florida public college, university or community college or through equivalent

coursework at another regionally accredited institution. Before transferring and to ensure timely progress toward the baccalaureate degree, students must also complete the prerequisite courses for their major as outlined in the [Transition Guides](#).

All courses not approved by the Florida Statewide Course Numbering System that will be used to satisfy requirements will be evaluated individually on the basis of content and will require a catalog course description and a copy of the syllabus for assessment.

### **Admission Requirements**

To be eligible for the joint programs, computer science and computer engineering students should:

1. Have a cumulative GPA of 3.25 or better at the end of their junior year; and
2. Formally apply to one of the joint programs, completing the admissions process at least one semester prior to the beginning of the M.S. portion of their program.

Once admitted to the program of their choice, students begin taking graduate courses (5000 level or higher) in their senior year that would apply to both the bachelor's and master's degree programs. Students in the joint programs must maintain continuous enrollment to remain in good standing. Students must also meet all the degree requirements of the graduate program they have chosen, including core courses and prerequisites. Those students who complete the M.S. degree program within one year after completing their B.S.C.E. or B.S.C.S. degree program will be presented with a certificate of recognition.

## **COMPUTER ENGINEERING TO ARTIFICIAL INTELLIGENCE BACHELOR OF SCIENCE IN COMPUTER ENGINEERING (B.S.C.E.) TO MASTER OF SCIENCE (M.S.) COMBINED PROGRAM**

## **COMPUTER SCIENCE TO ARTIFICIAL INTELLIGENCE BACHELOR OF SCIENCE IN COMPUTER SCIENCE (B.S.C.S.) TO MASTER OF SCIENCE (M.S.) COMBINED PROGRAM**

The department offers a combined Bachelor of Science in Computer Engineering (B.S.C.E.) or Bachelor of Science in Computer Science (B.S.C.S.) to Master of

Science in Artificial Intelligence (M.S.A.I.) program. Students in either combined program may count up to ~~9~~ 12 credits of approved graduate coursework (5000 level or higher) toward both their bachelor's and master's degrees as long as the combined program totals a minimum of 150 credits:

1. The student has met the minimum 120 credits for the bachelor's degree; and
2. The student has taken a minimum of 30 credits in 5000 level or higher courses for the master's program.

With an approximate duration of five years, these combined programs provide attractive ways for students to continue their graduate work. Students complete the undergraduate program first.

Prerequisite coursework for transfer students and admission requirements for these combined programs are the same as for the [B.S.C.E or B.S.C.S. to M.S. degree programs](#) noted above.

**ELECTRICAL ENGINEERING TO ARTIFICIAL INTELLIGENCE  
BACHELOR OF SCIENCE IN ELECTRICAL ENGINEERING (B.S.E.E.)  
TO MASTER OF SCIENCE (M.S.)  
COMBINED PROGRAM**

**ELECTRICAL ENGINEERING TO COMPUTER ENGINEERING  
BACHELOR OF SCIENCE IN ELECTRICAL ENGINEERING (B.S.E.E.)  
TO MASTER OF SCIENCE (M.S.)  
COMBINED PROGRAM**

The department offers a Bachelor of Science in Electrical Engineering/Master of Science in Artificial Intelligence degree program and a Bachelor of Science in Electrical Engineering/Master of Science in Computer Engineering degree program. [Program details](#) are listed in the Electrical Engineering section under Combined Programs.

## **BIOLOGICAL AND PHYSICAL SCIENCES TO ANY OF THE MASTER'S PROGRAMS IN ELECTRICAL ENGINEERING AND COMPUTER SCIENCE**

### **BACHELOR OF ARTS (B.A.) OR BACHELOR OF SCIENCE (B.S.) TO MASTER OF SCIENCE (M.S.) COMBINED PROGRAMS**

The B.A. or B.S. degree is completed at the [Wilkes Honors College](#) (WHC), and students then receive their bachelor's degree from WHC. Students complete their master's degree work in one of seven majors in the Department of Electrical Engineering and Computer Science in the College of Engineering and Computer Science (COECS) and receive their master's degree from COECS.

These combined programs are offered in partnership with the Wilkes Honors College:

B.A. or B.S. with Major in Biological and Physical Sciences to M.S. with Major in [Artificial Intelligence](#)

B.A. or B.S. with Major in Biological and Physical Sciences to M.S. with Major in [Biomedical Engineering](#)

B.A. or B.S. with Major in Biological and Physical Sciences to M.S. with Major in [Computer Engineering](#)

B.A. or B.S. with Major in Biological and Physical Sciences to M.S. with Major in [Computer Science](#)

B.A. or B.S. with Major in Biological and Physical Sciences to M.S. with Major in [Electrical Engineering](#)

B.A. or B.S. with Major in Biological and Physical Sciences to M.S. with Major in [Information Technology and Management with Advanced Information Technology Concentration](#)

B.A. or B.S. with Major in Biological and Physical Sciences to M.S. with Major in [Information Technology and Management with Computer Science Data Analytics Concentration](#)

Details for each combined program are listed in the [Wilkes Honors College](#) section.

## **COMPUTER ENGINEERING TO INFORMATION TECHNOLOGY AND MANAGEMENT**

### **BACHELOR OF SCIENCE IN COMPUTER ENGINEERING (B.S.C.E.) TO MASTER OF SCIENCE (M.S.) COMBINED PROGRAM**

Advanced Information Technology Concentration (M.S.)  
Computer Science Data Analytics Concentration (M.S.)

## **COMPUTER SCIENCE TO INFORMATION TECHNOLOGY AND MANAGEMENT**

### **BACHELOR OF ARTS IN COMPUTER SCIENCE (B.A.C.S.) OR BACHELOR OF SCIENCE IN COMPUTER SCIENCE (B.S.C.S.) TO MASTER OF SCIENCE (M.S.) COMBINED PROGRAM**

Advanced Information Technology Concentration (M.S.)  
Computer Science Data Analytics Concentration (M.S.)

## **ELECTRICAL ENGINEERING TO INFORMATION TECHNOLOGY AND MANAGEMENT**

### **BACHELOR OF SCIENCE IN ELECTRICAL ENGINEERING (B.S.E.E.) TO MASTER OF SCIENCE (M.S.) COMBINED PROGRAM**

Advanced Information Technology Concentration (M.S.)  
Computer Science Data Analytics Concentration (M.S.)

The department of Electrical Engineering and Computer Science offers a combined B.A.C.S. or B.S.C.S. in Computer Science or B.S.C.E. in Computer Engineering or B.S.E.E. in Electrical Engineering to M.S. in Information

Technology and Management: Advanced Information Technology or Computer Science Data Analytics concentrations degree program.

Students may count up to 9 12 credits of approved graduate coursework (5000 level or higher) toward both their bachelor's and master's degrees, see Table below. These graduate courses replace the technical elective courses in the bachelor's program. The proposed combined program does not increase the number of credits in the undergraduate degree.

All combined programs total a minimum of 150 credits as detailed:

1. The student has met the minimum 120 credits for the bachelor's degree; and
2. The student has taken a minimum of 30 credits in 5000 level or higher courses for the master's program.

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**Graduate courses to be counted toward both the bachelor's and master's degree programs. Alternative courses may be used with prior approval of the graduate advisor.**

***M.S. in Information Technology and Management: Advanced Information Technology or Computer Science Data Analytics concentrations***

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Introduction to Data Science	CAP 5768	3
Software Engineering	CEN 5035	3
Theory and Implementation of Database Systems	COP 6731	3
<u>Information Retrieval</u>	<u>CAP 6776</u>	<u>3</u>

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These combined programs provides an attractive way for students to continue their graduate work. Students complete the undergraduate program first. The combined program can be completed in approximately five years.

### **Admission Requirements**

The GRE ~~requirement is waived~~ is not required for this combined program. To be eligible for the combined program, baccalaureate students should:

1. Have a cumulative FAU GPA of 3.25 or better at the end of their junior year. Note that the cumulative FAU GPA of at least 3.25 must be maintained until the completion of the bachelor's degree.



2. Formally apply to the combined program, completing the admissions process at least one semester prior to the beginning of the master's portion of their program.

Students in the combined program must maintain continuous enrollment to remain in good standing.

### **Degree Requirements**

To be eligible for the combined bachelor to master program, students must fulfill the following requirements:

1. Complete all of the requirements for the B.A.C.S. or B.S.C.S. in Computer Science or the B.S.C.E. in Computer Engineering or the B.S.E.E. in Electrical Engineering and other requirements stipulated by the University and College
2. Complete all of the requirements for the M.S. in Information Technology and Management: Advanced Information Technology or Computer Science Data Analytics concentrations, with either the thesis or non-thesis option.

## **DATA SCIENCE AND ANALYTICS**

### **BACHELOR OF SCIENCE (B.S.) TO MASTER OF SCIENCE (M.S.) COMBINED PROGRAM**

Data Science and Engineering Concentration (B.S.)

## **DATA SCIENCE AND ANALYTICS TO ARTIFICIAL INTELLIGENCE**

### **BACHELOR OF SCIENCE (B.S.) TO MASTER OF SCIENCE (M.S.) COMBINED PROGRAM**

Data Science and Engineering Concentration (B.S.)

**DATA SCIENCE AND ANALYTICS TO  
INFORMATION TECHNOLOGY AND MANAGEMENT  
BACHELOR OF SCIENCE (B.S.) TO MASTER OF SCIENCE (M.S.)  
COMBINED PROGRAM**

**Data Science and Engineering Concentration (B.S.)  
Advanced Information Technology Concentration (M.S.)  
Computer Science Data Analytics Concentration (M.S.)**

The department of Electrical Engineering and Computer Science offers a combined B.S. in Data Science and Analytics: Data Science and Engineering concentration to M.S. in Artificial Intelligence or M.S. in Data Science and Analytics: Data Science and Engineering concentration or M.S. in Information Technology and Management: Advanced Information Technology or Computer Science Data Analytics concentrations degree program.

Students may count up to 9-12 credits of approved graduate coursework (5000 level or higher) toward both their bachelor's and master's degrees, see Table below. These graduate courses replace the general elective courses in the bachelor's program. The proposed combined program does not increase the number of credits in the undergraduate degree.

All combined programs total a minimum of 150 credits as detailed:

1. The student has met the minimum 120 credits for the bachelor's degree; and
2. The student has taken a minimum of 30 credits in 5000 level or higher courses for the master's program.

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**Graduate courses to be counted toward both the bachelor's and master's degree programs. Alternative courses may be used with prior approval of the graduate advisor.**

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***M.S. in Artificial Intelligence***

Computational Foundations of Artificial Intelligence	CAP 5625	3
Introduction to Data Science	CAP 5768	3
Data Mining and Machine Learning	CAP 6673	3
<u>Information Retrieval</u>	<u>CAP 6776</u>	<u>3</u>

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***M.S. in Data Science and Analytics: Data Science and Engineering concentration***

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Introduction to Data Science	CAP 5768	3
Data Mining and Machine Learning	CAP 6673	3
Information Retrieval	CAP 6776	3
<u>Introduction to Neural Networks</u>	<u>CAP 5615</u>	<u>3</u>

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***M.S. in Information Technology and Management: Advanced Information Technology or Computer Science Data Analytics concentrations***

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Introduction to Data Science	CAP 5768	3
Software Engineering	CEN 5035	3
Theory and Implementation of Database Systems	COP 6731	3
<u>Information Retrieval</u>	<u>CAP 6776</u>	<u>3</u>

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These combined programs ~~provides~~ provide an attractive way for students to continue their graduate work. Students complete the undergraduate program first. The combined program can be completed in approximately five years.

**Admission Requirements**

The GRE ~~requirement is waived~~ is not required for this combined program. To be eligible for the combined program, baccalaureate students should:

1. Have a cumulative FAU GPA of 3.25 or better at the end of their junior year. Note that the cumulative FAU GPA of at least 3.25 must be maintained until the completion of the bachelor's degree.
2. Formally apply to the combined program, completing the admissions process at least one semester prior to the beginning of the master's portion of their program.

Students in the combined program must maintain continuous enrollment to remain in good standing.

**Degree Requirements**

To be eligible for the combined bachelor to master program, students must fulfill the following requirements:

1. Complete all of the requirements for the B.S. in Data Science and Analytics: Data Science and Engineering concentration program and other requirements stipulated by the University and College
2. Complete all of the requirements for the M.S. in Artificial Intelligence program, on either the thesis or non-thesis option, or complete requirements for the M.S. in Data Science and Analytics: Data Science and Engineering concentration or complete requirements for the M.S. in Information Technology and Management: Advanced Information Technology or Computer Science Data Analytics concentrations.

## **BIOMEDICAL ENGINEERING**

### **ANY MAJOR IN THE COLLEGE (B.S.) TO BIOMEDICAL ENGINEERING**

### **BACHELOR OF SCIENCE (B.S.) TO MASTER OF SCIENCE (M.S.) COMBINED PROGRAM**

Bachelor of Science candidates in any College of Engineering and Computer Science program with a cumulative GPA of at least 3.25 at the end of their junior year are eligible to apply to the combined program, which allows students to complete their bachelor's, as well as a master's in Biomedical Engineering, within approximately five years. After application and admittance to the graduate program at the beginning of their senior year, up to ~~9~~ 12 credits of approved graduate-level courses (5000 level or higher) may be taken and counted toward both the B.S. and M.S. degrees as long as the combined program totals a minimum of 150 credits:

1. The student has met the minimum 120 credits for the bachelor's degree; and
2. The student has taken a minimum of 30 credits in 5000 level or higher courses for the master's program.

Students must retain a cumulative GPA of 3.25 by the time of graduation. Thesis and Non-Thesis options are available. See below for master's program admission and degree requirements.

## **ELECTRICAL ENGINEERING**

### **COMBINED PROGRAMS**

#### **ELECTRICAL ENGINEERING**

#### **BACHELOR OF SCIENCE IN ELECTRICAL ENGINEERING (B.S.E.E.) TO MASTER OF SCIENCE (M.S.)**

#### **COMBINED PROGRAM**

This program enables qualified FAU undergraduate EE students to obtain both their B.S.E.E. and M.S. degrees in approximately five years by allowing up to ~~9~~ 12 credits of approved graduate coursework (5000 level or higher) to apply toward both degrees as long as the combined program totals a minimum of 150 credits:

1. The student has met the minimum 120 credits for the bachelor's degree; and
2. The student has taken a minimum of 30 credits in 5000 level or higher courses for the master's program.

This essentially takes away approximately one semester of coursework and offers an attractive option for enthusiastic students planning for their graduate education. Students who have a cumulative GPA of 3.25 or better after completing 96 credits toward the B.S.E.E. are eligible for admission to the program. Students complete the undergraduate degree first.

#### **Prerequisite Coursework for Transfer Students**

Students transferring to Florida Atlantic University must complete both lower-division requirements (including the requirements of the Intellectual Foundations Program) and requirements for the college and major. Lower-division requirements may be completed through the A.A. degree from any Florida public college, university or community college or through equivalent coursework at another regionally accredited institution. Before transferring and to ensure timely progress toward the baccalaureate degree, students must also complete the prerequisite courses for their major as outlined in the [Transition Guides](#).

All courses not approved by the Florida Statewide Course Numbering System that will be used to satisfy requirements will be evaluated individually on the basis of content and will require a catalog course description and a copy of the syllabus for assessment.

### **Program Process**

1. Eligible students apply to the department for acceptance into the program during the term in which they will complete 96 credits toward their B.S.E.E. degree.
2. Eligible students take courses in their senior year that will apply to both their B.S.E.E. and M.S. degrees.
3. Students participating in this program may opt for the thesis or non-thesis option in their M.S. degree.
4. Students planning for the thesis option need a letter of recommendation from their potential thesis advisor.
5. Students must be admitted to the joint B.S.E.E./M.S. program at least one semester prior to the start of their M.S. degree program.
6. Students who are successful in completing their M.S. degree within one year will be presented a certificate of recognition.

### **Degree Requirements**

Students participating in this program must satisfy the degree requirements for a B.S.E.E. and M.S. as outlined in this catalog.

## **ELECTRICAL ENGINEERING TO ARTIFICIAL INTELLIGENCE BACHELOR OF SCIENCE IN ELECTRICAL ENGINEERING (B.S.E.E.) TO MASTER OF SCIENCE (M.S.) COMBINED PROGRAM**

The department offers a combined Bachelor of Science in Electrical Engineering (B.S.E.E.) to Master of Science in Artificial Intelligence (M.S.) program. Students in this combined program may count up to 9 12 credits of approved graduate coursework (5000 level or higher) toward both their bachelor's and master's degrees as long as the combined program totals a minimum of 150 credits:

1. The student has met the minimum 120 credits for the bachelor's degree; and
2. The student has taken a minimum of 30 credits in 5000 level or higher courses for the master's program.

With an approximate duration of five years, these combined programs provide attractive ways for students to continue their graduate work. Students complete the undergraduate program first.

Prerequisite coursework for transfer students and admission requirements for this combined programs are the same as for the [B.S.C.E or B.S.C.S. to M.S. degree programs](#) noted above.

### **Degree Requirements**

The following specific technical elective courses must be taken as part of the requirements for the B.S.E.E. degree.

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#### **Technical Electives (6 credits required)**

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Programming 2	COP 3014
Data Structures and Algorithm Analysis	COP 3530

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## **ELECTRICAL ENGINEERING TO COMPUTER ENGINEERING BACHELOR OF SCIENCE IN ELECTRICAL ENGINEERING (B.S.E.E.) TO MASTER OF SCIENCE (M.S.) COMBINED PROGRAM**

The B.S.E.E./M.S.Cp.E. program is intended for students who wish to take advantage of the broader systems orientation of the B.S.E.E. degree and then specialize in Computer Engineering. Selection of specific technical elective courses in the B.S.E.E. program qualifies the graduate to enter the M.S.Cp.E. program with no deficiencies, provided that the GPA and other computer engineering admission requirements are met. Up to **9 12** credits of approved graduate coursework (5000 level or higher) can apply toward both degrees as long as the combined program totals a minimum of 150 credits:

1. The student has met the minimum 120 credits for the bachelor's degree; and
2. The student has taken a minimum of 30 credits in 5000-level of higher courses for the master's program.

### **Prerequisite Coursework for Transfer Students**

Students transferring to Florida Atlantic University must complete both lower-division requirements (including the requirements of the Intellectual



Foundations Program) and requirements for the college and major. Lower-division requirements may be completed through the A.A. degree from any Florida public college university, or community college or through equivalent coursework at another regionally accredited institution. Before transferring and to ensure timely progress toward the baccalaureate degree, students must also complete the prerequisite courses for their major as outlined in the [Transition Guides](#) .

All courses not approved by the Florida Statewide Course Numbering System that will be used to satisfy requirements will be evaluated individually on the basis of content and will require a catalog course description and a copy of the syllabus for assessment.

### **Degree Requirements**

The following specific technical elective and semi-core courses must be taken as part of the requirements for the B.S.E.E. degree in order to enter the B.S.E.E. to M.S. with Major in Computer Engineering Degree Program.

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#### **Technical Electives (6 credits required)**

Programming 2	COP 3014
Data Structures and Algorithm Analysis	COP 3530

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#### **Electrical Engineering Semi-Core (6 credits required)**

Introduction to Embedded System Design	CDA 4630
Communication Networks	CNT 4007

## **ELECTRICAL ENGINEERING TO INFORMATION TECHNOLOGY AND MANAGEMENT**

### **BACHELOR OF SCIENCE IN ELECTRICAL ENGINEERING (B.S.E.E.) TO MASTER OF SCIENCE (M.S.)**

#### **COMBINED PROGRAM**

**Advanced Information Technology Concentration (M.S.)**

**Computer Science Data Analytics Concentration (M.S.)**

For details about this combined program, click [here](#).